CLAIMS

1. An assembly for driving a magnetic tape storage device, comprising:
a cylindrical reel driver having,
teeth configured to engage a supply reel hub of a magnetic tape storage device,
spline elements extending along an axial direction of the reel driver, and
a stop element, wherein at least one of the spline elements is disposed a first distance from the teeth of the reel driver, and the stop element is disposed a second distance from the teeth of the reel driver, the second distance greater than the first distance; and
a motor configured to rotate the reel driver, wherein the spline elements are disposed circumferentially around and adjacent a portion of the motor.

2. The device of claim 1, further including a reel plate having a planar surface registered to a portion of the motor having a planar surface, the reel plate positioned to abut the stop element.

3. The device of claim 1, wherein the spline elements are located on an interior surface of the reel driver.

4. The device of claim 1, wherein the spline elements include external projections.

5. The device of claim 1, wherein the spline elements are disposed around a hub of the motor.

6. The device of claim 1, wherein a difference between an inner diameter associated with the circumferentially disposed spline elements and an outer diameter of the portion of the motor is between approximately .001 and .003 inches.

7. The device of claim 1, wherein the stop element is disposed adjacent the portion of the motor.

8. The device of claim 1, wherein the stop element includes a protrusion disposed on an interior surface of the reel driver, the stop element having a planar upper surface.

9. The device of claim 1, further including a splined member coupled to the motor that engages at least a portion of the spline elements of the reel driver.

10. The device of claim 9, wherein the splined member includes a disc with spline elements corresponding to the spline elements of the reel driver.

11. The device of claim 9, wherein the splined member includes a planar surface corresponding to the location of the stop element.

12. The device of claim 1, further including a splined disc having spline elements corresponding to the spline elements of the reel driver, wherein the splined disc contacts the stop element when the reel driver is moved a predetermined distance in the axial direction relative to the splined disc and is registered to a planar surface of the motor.

13. A magnetic tape drive, including

a cylindrical reel driver having,

teeth configured to engage a supply reel hub of a magnetic storage tape device,

spline elements extending along an axial direction of the reel driver, and

a stop element, wherein at least one of the spline elements is disposed a first distance from the teeth of the reel driver, and the stop element is disposed a second distance from the teeth of the reel driver, the second distance greater than the first distance;

a splined member coupled to the spline elements of the reel driver; and

a first motor configured to rotate the splined member, wherein an inner diameter associated with circumferentially disposed spline elements is registered circumferentially around a portion of the first motor.

14. The tape drive of claim 13, wherein the splined member includes a planar surface coplanar with a planar surface of the first motor and disposed to abut the stop element.

15. The tape drive of claim 13, wherein the difference between the inner diameter of the spline elements and an outer diameter of the portion of the first motor is between approximately .001 and .003 inches.

16. The tape drive of claim 13, wherein the spline elements are disposed circumferentially around a hub of the first motor.

17. The tape drive of claim 13, wherein the stop element is disposed adjacent a portion of the first motor.

18. The tape drive of claim 13, wherein the stop element includes two or more protrusions disposed adjacent a hub of the first motor.

19. The tape drive of claim 13, further including a second motor configured to translate the reel driver in an axial direction.

20. The tape drive of claim 13, wherein the spline elements of the reel driver are located on an interior surface of the reel driver.

21. The tape drive of claim 13, wherein the splined member includes a disc having spline elements corresponding to the spline elements of the reel driver.

22. The tape drive of claim 13, wherein the splined member includes a planar surface corresponding to the stop element of the reel driver.

23. The tape drive of claim 13, wherein the splined member includes a splined disc having spline elements corresponding to the spline elements of the reel driver, and the splined disc contacts the stop element of the reel driver when the reel driver is moved a predetermined distance in the axial direction relative to the splined disc.

24. A reel driver for driving a tape cartridge, comprising:

a cylindrical reel driver having a toothed upper surface configured to engage a supply reel hub of a magnetic tape storage device;

spline elements extending along an axial direction of the reel driver and disposed a first distance from the teeth of the reel driver, wherein the spline elements are adapted to be disposed circumferentially around a portion of a motor; and

a stop element disposed a second distance from the teeth of the reel driver, the second distance greater than the first distance.

25. The device of claim 24, wherein the spline elements are located on an interior surface of the reel driver.

26. The device of claim 24, wherein the spline elements include external projections.

27. The device of claim 24, wherein the stop element is adapted to be disposed circumferentially around a portion of the motor.

28. The device of claim 24, wherein the stop element includes a protrusion disposed on the interior surface of the reel driver having a planar upper surface.

29. A method for driving a magnetic tape storage device with a reel driver assembly, comprising:

translating a reel driver in an axial direction to engage a supply hub of a magnetic tape storage device; and

rotating the reel driver with a spindle motor, wherein

the reel driver includes spline elements registered circumferentially around a hub of the spindle motor, and

the reel driver is rotated by the spindle motor through a spline joint.

30. The method of claim 29, wherein the reel driver includes a stop element that abuts a planar surface coplanar with a surface of the spindle motor.

31. The method of claim 29, wherein the reel driver includes external spline elements disposed along the axial direction of the reel driver.

32. The method of claim 29, wherein the reel driver includes three or more spline elements.

33. The method of claim 29, wherein the reel driver includes one or more stop elements, wherein the stop elements abut a structure associated with the reel driver assembly after a predetermined axial translation.

34. The method of claim 29, wherein the reel driver includes one or more stop elements disposed circumferentially around a hub of the spindle motor, and the one or more stop elements abut a splined reel plate registered with a planar surface of the spindle motor after a predetermined axial translation.

35. The method of claim 34, wherein the reel plate and stop element are configured to have opposing planar surfaces.

36. The method of claim 29, wherein the spline joint is formed between the reel driver and a reel plate coupled to the spindle motor.

37. The method of claim 29, further including actuating a second motor to translate the reel drive in an axial direction.